

Johne's Disease

Johne's disease (pronounced "yo-knees") is a contagious, chronic, and usually fatal infection that affects primarily the small intestine of ruminants. All ruminants are susceptible to Johne's disease. Johne's disease is caused by *Mycobacterium paratuberculosis*, a hardy bacteria related to the agents of leprosy and tuberculosis. The disease is worldwide in distribution.

Clinical Signs

Signs of Johne's disease include weight loss and diarrhea (in cattle) with a normal appetite. Several weeks after the onset of diarrhea, a soft swelling may occur under the jaw (bottle jaw). Bottle jaw or intermandibular edema is due to protein loss from the bloodstream into the digestive tract. Animals at this stage of the disease will not live very long, perhaps a few weeks at most.

Signs are rarely evident until 2 or more years after the initial infection (in cattle, maybe sooner in other species), which usually occurs shortly after birth. Animals are most susceptible to the infection in the first year of life. Newborns most often become infected by swallowing small amounts of infected manure from the birthing environment or udder of the mother. In addition, newborns may become infected while in the uterus or by swallowing bacteria passed in milk and colostrum. Animals exposed at an older age, or exposed to a very small dose of bacteria at a young age, are not likely to develop clinical disease until they are much older than 2 years.

A national study of U.S. dairies, Dairy NAHMS 96, found that approximately 22 percent of U.S. dairy farms have at least 10 percent of the herd infected with Johne's disease. The study showed that for herds with a percentage of cull cows with clinical signs less than 10 percent, the annual cost of Johne's disease is \$40 per cow. Infected herds that had more than 10 percent of their cull cows showing clinical signs showed losses of \$227 per cow in their inventory per year. This loss was due to reduced milk production, early culling, and poor conditioning at culling. Accurate estimates of the cost of Johne's disease in beef herds still need to be determined.

Farm-specific plans can be implemented to reduce economic losses and cleanup Johne's disease from the farm. For more information on Johne's disease, diagnosis, prevention, and control, contact your herd veterinarian or your State's extension office.

How Johne's Disease Spreads

The primary site targeted by Johne's disease is the lower part of the intestine known as the ileum. The bacteria that causes Johne's disease embeds itself in the wall of the ileum. As an immune response, infected tissues attempt to regenerate healthy tissue, which leads to visible thickening of the intestines. This prevents nutrient absorption and weight loss results. Late in the infection, antibody production by the animal can be found in serum of animals and is an indicator that clinical signs of disease and death from the infection will soon follow.

Prevention

Transmission of Johne's disease occurs when healthy-looking but infected animals are introduced to the herd. Owners of herds that are not infected should take precautions against introduction of Johne's disease. Such precautions include keeping a closed herd, or requiring replacement animals come from test-negative herds.

In April 2002, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) Veterinary Services published Uniform Program Standards for the Voluntary Bovine Johne's Disease Control Program (VBJDCP). The objective of this program is to bring uniformity to the States that currently have individual Johne's disease control programs in place and to assist those States that would like to implement programs of their own.

Some basic prevention strategies are:

- Calves, lambs, kids, and other ruminants should be born in a clean environment.
- Reduce newborns' exposure to manure from adult animals by separation when possible.
- Avoid manure contamination of feed by using feed bunks and not using the same equipment to handle feed and move manure.
- Avoid manure contamination of water sources where animals drink.
- For natural colostrum needs of newborn animals, use colostrum from Johne's-negative animals.
- Do not pool colostrum.
- Avoid natural nursing and milk feeding whenever possible. Feed an artificial milk replacer or pasteurized milk instead of raw milk to supply the needs of newborns. Never feed pooled milk or waste milk.
- Thoroughly clean the udder and teats before collection of the colostrum to avoid manure contamination.

- *M. paratuberculosis* can survive up to a year in the environment so if possible, for pastures that have become contaminated, till the ground or graze using nonreplacement feeder cattle.
- Identify all females in the herd. Identify and remove, or keep separate, all test-positive animals.
- Prevent infection from spreading by culling or separating offspring of infected mothers as soon as possible.
- If purchasing herd additions, try to buy from low risk herds. Some herds are enrolled in the VBJDCP to help identify their herd as low risk.
- Work with your veterinarian to develop a strategic plan for Johne's prevention and control for your farm. Consult with a veterinarian about which Johne's test is best for your situation and use a test-certified diagnostic laboratory.

APHIS' Role

APHIS' role in the design and implementation of a national Johne's disease control program has been to provide expertise and help coordinate implementation of Johne's disease programs by the States. In addition, APHIS works closely with State and industry counterparts through the U.S. Animal Health Association's (USAHA) national Johne's disease working group.

In the fall of 1995, USAHA appointed the working group to assist the Johne's committee of USAHA in developing a national, coordinated Johne's disease effort in conjunction with the States and cattle industries. The working group, in coordination with APHIS, developed a strategic plan designed to reduce the prevalence of Johne's disease in U.S. cattle. This plan includes a national educational campaign, the VBJDCP, and guidelines for States to assist infected herds. This national program is designed to be producer driven and voluntary. Other U.S. livestock industries are examining potential certification and control programs for their industries as well. The American Zoological Association has prepared Johne's disease guidelines.

For More Information

For more information on the working group's activities, visit USAHA's Web site at: <http://www.usaha.org>.

For more information on APHIS' role in developing and implementing the VJDBCP contact:

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